Project WET
Connections to KY
Core Content 4.1

Where Are the Frogs? p.279

Elementary

Science
SC-04-4.7.2
Students will:
• 	describe human interactions in the environment where they live;
• 	classify the interactions as beneficial or harmful to the environment using data/evidence to support conclusions.

All organisms, including humans, cause changes in the environment where they live. Some of these changes are detrimental to the organism or to other organisms; other changes are beneficial (e.g., dams benefit some aquatic organisms but are detrimental to others). By evaluating the consequences of change using cause and effect relationships, solutions to real life situations/dilemmas can be proposed.
DOK 3

Middle School

Science
SC-07-1.1.1
Students will:
• 	classify substances according to their chemical/reactive properties;
• 	infer real life applications for substances based on chemical/reactive properties.

In chemical reactions, the total mass is conserved. Substances are often classified into groups if they react in similar ways. The patterns, which allow classification, can be used to infer or understand real life applications for those substances.
DOK 3

SC-06-1.1.2
Students will identify and describe evidence of chemical and physical changes in matter.

 In chemical reactions, the total mass is conserved. Substances are often classified into groups if they react in similar ways. The patterns that allow

classification can be used to infer or understand real life applications for those substances.
DOK 2

SC-08-1.1.1
Students will:
•   interpret models/representations of elements;
•   classify elements based upon patterns in their physical (e.g., density, boiling point, solubility) and chemical (e.g., flammability, reactivity) properties. Models enhance understanding that an element is composed of a single type of atom. Organization/interpretation of data illustrates that when elements are listed according to the number of protons, repeating patterns of physical (e.g., density, boiling point, solubility) and chemical properties (e.g., flammability, reactivity), can be used to identify families of elements with similar properties.
DOK 2

SC-07-1.1.2
Students will:
•   classify elements and compounds according to their properties;
•   compare properties of different combinations of elements.

Observations of simple experiments illustrate that the atoms of chemical elements do not break down during normal laboratory reactions such as heating, exposure to electric currents, or reaction with acids. Elements combine in many ways to produce compounds. Common patterns emerge when comparing and contrasting the properties of compounds to the elements from which they are made. Understanding of these patterns allows for evidence- based predictions of new or different combinations of elements/compounds.
DOK 2

SC-08-1.1.2
Students will understand that matter is made of minute particles called atoms, and atoms are composed of even smaller components. The components of an atom have measurable properties such as mass and electrical charge. Each atom has a positively charged nucleus surrounded by negatively charged electrons. The electric force between the nucleus and the electrons holds the atom together

SC-08-1.1.3
Students will understand that the atom's nucleus is composed of protons and neutrons that are much more massive than electrons.

SC-06-4.7.1
Students will describe the consequences of change in one or more abiotic factors on a population within an ecosystem.

The number of organisms an ecosystem can support depends on the resources available and abiotic factors (e.g., quantity of light and water, range of temperatures, soil composition).
DOK

SC-07-4.7.1
Students will compare abiotic and biotic factors in an ecosystem in order to explain consequences of change in one or more factors.

The number of organisms an ecosystem can support depends on the resources available and abiotic factors (e.g., quantity of light and water, range of temperatures, soil composition). Given adequate biotic and abiotic resources and no diseases or predators, populations (including humans) increase at rapid rates. Lack of resources and other factors, such as predation and climate, limit the growth of populations in specific niches in the ecosystem.
DOK3

SC-08-4.7.1
Students will describe the interrelationships and interdependencies within an ecosystem and predict the effects of change on one or more components within an ecosystem.

Organisms both cooperate and compete in ecosystems. Often changes in one component of an ecosystem will have effects on the entire system that are difficult to predict. The interrelationships and interdependencies of these organisms may generate ecosystems that are stable for hundreds or thousands of years.
DOK 3

High School

Science
SC-HS-1.1.5
Students will explain the role of intermolecular or intramolecular interactions on the physical properties (solubility, density, polarity, conductivity, boiling/melting points) of compounds.
The physical properties of compounds reflect the nature of the interactions among molecules. These interactions are determined by the structure of the molecule including the constituent atoms.
DOK 2

SC-HS-1.1.8
Students will:
•   explain the importance of chemical reactions in a real-world context;
•   justify conclusions using evidence/data from chemical reactions.

Chemical reactions (e.g., acids and bases, oxidation, combustion of fuels, rusting, tarnishing) occur all around us and in every cell in our bodies. These reactions may release or absorb energy.
DOK 3

SC-HS-3.5.1
Students will:
•   predict the impact on species of changes to 1) the potential for a species to increase its numbers, (2) the genetic variability of offspring due to mutation and recombination of genes, (3) a finite supply of the resources required for life, or (4) natural selection;
•   propose solutions to real-world problems of endangered and extinct species.
Species change over time. Biological change over time is the consequence of the interactions of (1) the potential for a species to increase its numbers, (2) the genetic variability of offspring due to mutation and recombination of genes, (3) a finite supply of the resources required for life and (4) natural selection. The consequences of change over time provide a scientific explanation for the fossil record of ancient life forms and for the striking molecular similarities observed among the diverse species of living organisms. Changes in DNA (mutations) occur spontaneously at low rates. Some of these changes make no difference to the organism, whereas others can change cells and organisms. Only mutations in germ cells have the potential to create the variation that changes an organism's future offspring.
DOK 3

SC-HS-4.7.1
Students will:
•   analyze relationships and interactions among organisms in ecosystems;
•   predict the effects on other organisms of changes to one or more components of the ecosystem.
Organisms both cooperate and compete in ecosystems. Often changes in one component of an ecosystem will have effects on the entire system that are difficult to predict. The interrelationships and interdependencies of these organisms may generate ecosystems that are stable for hundreds or thousands of years.
DOK 3